REMARKS

Drawings

The Applicants take notice of the Examiner's objection to the drawings and will correct the drawings accordingly once the application is allowed by the Examiner.

Specification

The Applicants have amended the abstract and made it less than 150 words.

Claim rejections - 35 USC §102 rejection

With regards to the Examiner's citation of Golnas as prior art reference the Applicants hold as follows: in Golnas a thermal insulation layer is used to minimize the heat transfer occurring during a sequential depositing of molten metal to form a bulk layer on top of the thermal insulation layer. The sequential deposition of molten metal drops is performed in conjunction with the insulating properties of the insulation layer such that the thermal rise of the sensor remains within a predetermined range. Golnas invention has two limitations overcome in the present invention. Firstly, the introduction of an additional insulation layer degrades the sensor's sensitivity. Even worth, during fabrication and/or operational use the insulation layer may detach from one of the adjacent layers causing a slipping in the interface and a malfunction of the sensor. Secondly, adjusting the deposition process of the bulk layer to the insulation characteristics of the insulation layer reduces fabrication flexibility.

In the present invention to the contrary, the a metal structure is embedding a sensor of a thickness and a metal such that externally induced local thermal rises occurring during molten metal forming processes above 660°C of a bulk material is transformed into balanced heat load onto the sensor for a uniformly expanding without cracking of it. The bulk material is molted thereby in immediate contact to said metal structure. As a result, the interface between bulk the sensor and the bulk material is in an improved strain transmitting contact with the bulk layer. Further the bulk layer may be fabricated with metal forming processes above 660°C without need to comply with thermal requirements of the metal structure. Claim 7 has been amended accordingly.

Claim 8 has been amended to add the limitation of the metal structure being in direct adhesive contact with the sensor to more distinctively claim the novel and non obvious aspect of the invention in view of Golnas.

Claim 22 has been amended to read directly on claim 7 including the limitations of the original claims 8, 10, 17, excluding the limitation of "the metal structure being in direct adhesive contact with the sensor" newly added to claim 8.

Claim 23 has been amended to include the limitation "wherein said first insulating layer and said second insulating layers are deposited of an insulating material with a maximum thickness for providing adequate electric insulation of said sensor layer in operation." This added limitation makes the claim patent ably distinct from Golmas where an insulation layer is provided with of a material and a thickness for providing sufficient thermal insulation. As is known in the art, thermal insulation and electrical insulation require significantly different properties of the insulation layer. In the present invention, the insulation layer may hence be only in the range between 10 and 15nm as claimed in claims 31, 32.

Since the Applicants have amended claims 7, 8, 22, 23 to more distinctively claim their invention and to overcome the Examiner's rejections with reference to Golnas, the claims depending on claims 7, 8, 22, 23 overcome the Examiner's rejection as well.

Claim rejections - 35 USC §103 rejection

Since the Applicants have overcome the Examiner's 35 USC §102 rejection as stated in the chapter above, Golnas is no longer applicable as reference for a 35 USC §103 rejection, which mutes the arguments stated by the Examiner with respect to his 35 USC §103 rejections.

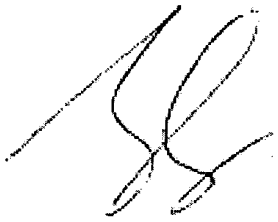
Allowable Subject Matter

The Applicants acknowledge the Examiner's indication of allowable subject matter but hold that all claims should be reconsidered and allowed in the next Office Action.

In Conclusion

The Applicants have responded to the Examiner's objections and rejections where applicable and respectfully request the application being reconsidered and allowed in the next Office Action.

Respectfully submitted,



Johannes Schneeberger

Reg. No. 48,910

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Lumen Intellectual Property Services

45 Cabot Avenue, Suite 110

Santa Clara, CA 95051-6670

(408) 260-7300 x18

Please amend the following claim **7** as indicated in the marked up copy below.

7.*(once amended)*A metal embedded sensor comprising:

a metal structure comprising a metal having a melting temperature above 660°C; and

a sensor embedded inside the metal structure;

wherein said metal structure is of a thickness and a metal such that externally induced local thermal rises occurring during molten metal forming processes above 660°C of a bulk material is transformed into balanced heat load onto the sensor for a uniformly expanding without cracking of it, said bulk material being molted in immediate contact to said metal structure.

Please amend the following claim **8** as indicated in the marked up copy below.

8. *(once amended)* The metal embedded sensor of claim 7, wherein the metal structure comprises:

a. a coating metallic layer; [and]

b. an embedding metallic layer on the coating metallic layer; and

wherein said metal structure is in direct adhesive contact with said sensor.

Please amend the following claim **22** as indicated in the marked up copy below.

22. *(once amended)* The metal embedded sensor of claim [17] 7, wherein the sensor is in the form of a thin film thermo-mechanical sensor, and wherein the metal structure comprises:

b. a coating metallic layer comprising

j. a first metallic layer;

ii. a second metallic layer on the first metallic layer, said second metallic layer selected from the group consisting of copper, nickel, iron, and platinum; and

b. an embedding metallic layer on the coating metallic layer.

Please amend the following claim **23** as indicated in the marked up copy below.

23. *(once amended)* The metal embedded sensor of claim 22, wherein the sensor comprises:

a. a first insulating layer ;

b. a sensor layer disposed on the first insulating layer; [and]

c. a second insulating layer disposed on the sensor layer; and

wherein said first insulating layer and said second insulating layers are deposited of an insulating material with a maximum thickness for providing adequate electric insulation of said sensor layer in operation.